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Many investigations have been made on the so-called influence of various environmental factors on the production of pigments by fungi, but a survey of the facts seems to indicate that between the absorption of an elementary nutrient and the production of a complex pigment two processes intervene to permit of the establishment of a direct relation between stages at the extreme ends of the series. A much better knowledge than is at hand at present of the nature and structure of fungous pigments is necessary before their physiological status can be determined. Different colors may often be due to the modification of the same pigment, depending on different reactions of the medium.—H. HASSELBRING.

**Origin and goal of geobotany.**—RÜBEL<sup>8</sup> has issued a compact and useful paper, dealing with the main phases of the development of geobotany and with the aims of its various subdivisions. Geobotany he regards as embracing all interrelations between plants and the earth, including much of ecology, chorology, chronology, and genetics; thus it includes all of phytogeography in the widest sense, and more. The historical presentation deals especially with the work of THEOPHRASTUS, TOURNEFORT, LINNAEUS, HALLER, SOULAVIE, WILLDENOW, HUMBOLDT, WAHLENBERG, and SCHOUW. Geobotany may be either floristic or vegetational, each of which subdivisions may consider the problems of space (distribution), habitat (ecology), or change (genetics). Thus RÜBEL recognizes 6 fields of geobotany: autochorology, or floristics; synchorology, or the distribution of plant associations; autecology, or the relation between the individual and the habitat; synecology, or the relation between the plant association and the habitat; autogenetics, or the change of floras; and syngenetics, or the change of plant associations. It appears to the reviewer that this is the most logical classification of these fields of study with which he is familiar. As a matter of practice, however, it is unlikely that investigators will increasingly recognize such subdivisions. A treatise dealing only with synchorology was fairly satisfactory in times gone by, but in these days it would seem sterile, except as livened up with ecology and genetics.—H. C. COWLES.

**Continuous variation.**—STOUT and BOAS,<sup>9</sup> as the result of their extensive statistical studies of variation in *Cichorium*, recommend that critical study of species variation should be based upon intensive studies of partial (existing among the parts of a single individual) and individual (characteristics of plants as wholes based on their entire record) variabilities. They suggest that failure to appreciate this necessity has allowed considerable error to creep into the work of a number of investigators. For example, hereditary studies of such

<sup>8</sup> RÜBEL, EDUARD, Anfänge und Ziele der Geobotanik. Vierteljahrsschrift der naturforschenden Gesellschaft in Zürich 62:629-650. 1917.

<sup>9</sup> STOUT, A. B., and BOAS, HELENE M., Statistical studies of flower number per head in *Cichorium Intybus*: kinds of variability, heredity, and effects of selection. Mem. Torr. Bot. Club 17:334-458. pls. 10-13. 1918.